

CLAIMS

1. A PC card assembly comprising:
 - a printed circuit board assembly (PCBA) including:
 - a printed circuit board (PCB) having first and second parallel side edges and first and second parallel end edges located at respective ends of the first and second side edges, and
 - a connector mounted on the second end edge of the PCB; and
 - a housing comprising a frame-like body including:
 - a lower wall,
 - first and second parallel side rails respectively connected to opposing side edges of the lower wall, and
 - an end rail extending along a first end edge of the lower wall,wherein the lower wall, first and second side rails and the end rail define a pocket for receiving the PCB of the PCBA,
 - wherein each of the first and second side rails include a step-like mounting structure located inside the pocket, the mounting structure including a peripheral shelf and at least one alignment protrusion extending onto the peripheral shelf, and
 - wherein each of the first and second parallel side edges of the PCB define at least one alignment notch located such that when the PCBA is mounted onto frame-like body, the first and second side edges contact the peripheral shelf, and each alignment protrusion is received in a corresponding said alignment notch such that the PCB is maintained in a predetermined position relative to the frame-like body.
2. The PC card assembly according to Claim 1, wherein the step-like mounting structure further comprises vertical upper

wall portions respectively extending from the peripheral shelf to upper surfaces of the first and second parallel side rails.

3. The PC card assembly according to Claim 1, wherein the PCBA further comprises a plurality of integrated circuits (ICs) mounted on a lower surface of the PCB, and wherein the lower wall of the frame-like body defines a plurality of depressions, each depression receiving at least a portion of a corresponding IC when the PCBA is mounted onto the frame-like body.

4. The PC card assembly according to Claim 3, wherein the housing further comprises a top cover mounted onto upper surfaces of the side rails and end rail of the frame-like body, wherein the top cover includes an upper wall that extends over an upper surface of the PCB.

5. The PC card assembly according to Claim 4, wherein the PCBA further comprises a plurality of second ICs mounted on the upper surface of the PCB, and wherein the upper wall of the top cover defines a plurality of depressions, each depression receiving at least a portion of a corresponding one of the second ICs when the top cover is mounted onto the frame-like body.

6. The PC card assembly according to Claim 4, wherein the top cover is attached to the frame-like body by welding joints.

7. The PC card assembly according to Claim 1, wherein the frame-like body defines an open end located at a second end of the first and second side rails,

wherein the first and second side rails define a longitudinal slot extending along the peripheral shelf, and

wherein the first and second parallel side edges of the PCB are received in the longitudinal slot when the PCBA is mounted onto the frame-like body.

8. The PC card assembly according to Claim 7, wherein the end rail defines an end portion of the longitudinal slot for receiving a rear edge of the PCB when the PCB is fully inserted into the frame-like body.

9. The PC card assembly according to Claim 7, further comprising a metal support having first and second side arms received into corresponding slot portions formed in the first and second side rails of the frame-like body.

10. The PC card assembly according to Claim 1, wherein upper surfaces of the first and second side rails of the frame-like body define a plurality of alignment holes, and wherein the housing further comprises a top cover including a plurality of alignment pins, each alignment pin being received into a corresponding alignment hole.

11. The PC card assembly according to Claim 10, wherein the frame-like body further comprises first and second peripheral walls respectively extending along said upper surfaces of the first and second side rails, and

wherein the top cover further comprises first and second elongated ribs respectively extending along side edges of the top cover, each of the first and second elongated ribs being mounted over a corresponding one of the first and second peripheral walls.

12. The PC card assembly according to Claim 1,

wherein a first gap is defined between the first side edge of the PCB and the first side rail of the frame-like body, and a second gap is defined between the second side edge of the PCB and the second side rail of the frame-like body, and

wherein the housing further comprises a top cover including first and second side edges extending into the pocket between the first and second side rails such that a first end portion of the first side edge extends through the first gap and is connected to a first portion of the peripheral shelf, and a second end portion of the second side edge extends through the second gap and is connected to a second portion of the peripheral shelf.

13. A PC card assembly comprising:

a printed circuit board assembly (PCBA) including:

a printed circuit board (PCB) having first and second parallel side edges and first and second parallel end edges located at respective ends of the first and second side edges, and

a connector mounted on the second end edge of the PCB;
and

a frame-like body including first and second parallel side rails and an end rail extending between first ends of the first and second side rails,

wherein the frame-like body defines an open end located at second ends of the first and second side rails,

wherein each of the first and second side rails include a step-like mounting structure defining a longitudinal slot communicating with the open end,

wherein the longitudinal slot includes at least one alignment protrusion extending into the longitudinal slot, and

wherein at least one of the first and second parallel side edges of the PCB define an alignment notch located such that when the first end of the PCB is inserted into the open end of the frame-like body, the first and second side edges are engaged in the longitudinal slot, and the alignment protrusions are received in the alignment notches such that the PCB is maintained in a predetermined position relative to the frame-like body.

14. The PC card assembly according to Claim 13, wherein the end rail defines an end portion of the longitudinal slot for receiving a rear edge of the PCB when the PCB is fully inserted into the frame-like body.

15. The PC card assembly according to Claim 13, further comprising a metal support having first and second side arms received into corresponding slot portions formed in the first and second side rails of the frame-like body.

16. The PC card assembly according to Claim 13,
wherein the PCBA further comprises a plurality of integrated circuits (ICs) mounted on at least one surface of the PCB, and
wherein the frame-like body further comprises a lower wall defining a plurality of depressions, each depression receiving at least a portion of a corresponding one of said ICs when the PCBA is mounted onto the frame-like body.

17. The PC card assembly according to Claim 16, further comprises a top cover mounted onto upper surfaces of the side rails and end rail of the frame-like body, wherein the top cover includes an upper wall that extends over an upper surface of the PCB.

18. The PC card assembly according to Claim 13,
wherein upper surfaces of the first and second side rails of the frame-like body define a plurality of alignment holes, and
wherein the PC card assembly further comprises a top cover including a plurality of alignment pins, each alignment pin being received into a corresponding alignment hole.

19. The PC card assembly according to Claim 18,
wherein the frame-like body further comprises first and second peripheral walls respectively extending along said upper surfaces of the first and second side rails, and
wherein the top cover further comprises first and second elongated ribs respectively extending along side edges of the top cover, each of the first and second elongated ribs being mounted over a corresponding one of the first and second peripheral walls.

20. A method for assembling a PC card, the method comprising:

producing a printed circuit board assembly (PCBA) including a printed circuit board (PCB) having first and second parallel side edges and first and second parallel end edges located at respective ends of the first and second side edges, and a connector mounted on the second end edge of the PCB, wherein each of the first and second parallel side edges of the PCB define at least one alignment notch;

producing a frame-like body including a lower wall, first and second parallel side rails respectively connected to opposing side edges of the lower wall, and an end rail extending along a first end edge of the lower wall, wherein the lower wall, first and second side rails and the end rail define a pocket for receiving the PCB of the PCBA, wherein each of the first and

second side rails include a step-like mounting structure located inside the pocket, the mounting structure including a peripheral shelf and at least one alignment protrusion extending onto the peripheral shelf; and

mounting the PCBA onto the frame-like body such that the first and second side edges of the PCB contact the peripheral shelf, and the alignment protrusions are received in the alignment notches, thereby maintaining the PCBA in a predetermined position relative to the frame-like body.

21. The method according to Claim 20, wherein the frame-like body defines an open end located at a second end of the first and second side rails, wherein the first and second side rails define a longitudinal slot extending along the peripheral shelf, and wherein mounting the PCBA comprises:

inserting the first edge of the PCB into the open end of the frame-like body; and

sliding the PCB assembly relative to the frame such that the PCB slides along the longitudinal slot until the alignment protrusions are snap-coupled into the alignment notches.

22. The method according to Claim 20, further comprising securing a top cover to the frame-like body, thereby enclosing the PCB inside a housing formed by the frame-like body and the top cover.

23. The method according to Claim 20, wherein securing the top cover to the frame-like body comprises ultrasonically joining the top cover to the frame-like body utilizing ultrasonic bonding features formed on upper surfaces of the first and second side rails.

24. The method according to Claim 20, wherein securing the top cover to the frame-like body comprises inserting alignment pins extending from the top cover into alignment holes formed in the frame-like body, and press-fitting elongated ribs formed on the top cover over walls formed on the side rails of the frame-like body, whereby the top cover is snap-coupled onto the frame-like body.